CREEP TEST SUMMARY (ASTM C 512)

4-9335

Mix Designation T5B Date of Mixing NOV 8/84

Specimen Numbers T5B 3-6

Curing Regime Days Moist _____, Days at 50% R.H. 365

Date of Loading NOV. 19/85 Age 376 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 570 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes: CONTRACT REPORT NO. OST85-00004
CONTRACTOR: UNIVERSITY OF CALGARY

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens T5B-3	Loaded Specimens T5B-4	Unloaded Specimens T5B-5	Unloaded Specimens T5B-6	Creep Strain			
NOV. 19/85	0	577	563						
19/85	2¼ HR	603	590	3	0	25			
20/85	1	650	637	70	13	57			
21/85	2	673	663	70	17	80			
22/85	3	687	673	73	70	88			
25/85	6	727	723	37	33	120			
27/85	8	750	747	37	37	142			
DEC. 03/85	14	787	790	57	57	162			
10/85	21	850	843	83	83	194			
17/85	28	887	890	93	97	224			
JAN 16/86	58	990	983	160	167	253			
FEB. 17/86	90	1090	1087	213	217	304			
MAR. 21/86	127	1163	1157	243	243	347			
APR. 23/86	155	1203	1193	270	270	358			
MAY 20/86	182	1233	1230	270	273	390			
JUN. 19/86	212	1293	1287	317	310	407			
JULY 21/86	244	1320	1313	323	327	422			
AUG. 15/86	269	1340	1330	333	323	437			
SEPT. 24/86	309	1407	1407	357	357	480			
OCT. 15/86	330	1430	1427	367	367	492			
NOV. 19/86	365	1460	1457	380	370	514			

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CREEP TEST SUMMARY (ASTM C 512)

Mix Designation T4B Date of Mixing NOV. 15/84

Specimen Numbers T4B 3-6

Curing Regime Days Moist _____, Days at 50% R.H. 365

Date of Loading NOV. 19/85 Age 369 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 519 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens T4B-3	Loaded Specimens T4B-4	Unloaded Specimens T4B-5	Unloaded Specimens T4B-6	Creep Strain
.19/85	0	510	527			
19/85	2 HR	533	550	3	3	20
20/85	1	573	587	13	10	50
21/85	2	607	620	17	10	81
22/85	3	620	627	17	13	90
25/85	6	653	670	23	17	123
27/85	8	677	690	23	23	147
C. 03/85	14	707	720	43	37	155
10/85	21	767	783	73	67	186
17/85	28	800	810	90	80	201
V. 16/86	58	900	920	153	140	245
3. 17/86	90	990	1000	207	183	281
2. 21/86	127	1050	1070	237	213	316
2. 23/86	155	1087	1103	257	237	329
V 20/86	182	1110	1130	263	240	350
V. 19/86	212	1173	1193	297	277	377
V 21/86	244	1197	1210	307	287	388
E. 15/86	269	1217	1277	303	287	408
T. 24/86	309	1283	1300	330	310	453
E. 15/86	330	1303	1323	347	327	457
E. 19/86	365	1327	1340	353	330	473

Mix Designation T3B Date of Mixing NOV. 22/84

Specimen Numbers T3B 3-6

Curing Regime Days Moist _____, Days at 50% R.H. 365

Date of Loading DEC. 10/85 Age 383 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 575 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary - με

Date	Time under load - days	Loaded Specimens T3B-3	Loaded Specimens T3B-4	Unloaded Specimens T3B-5	Unloaded Specimens T3B-6	Creep Strain			
EC. 10/85	0	573	577						
10/85	3 HR	603	603		−3	30			
11/85	1	623	637	−3	0	57			
12/85	2	660	667	−3	7	87			
13/85	3	673	683	−3	7	101			
16/85	6	710	713	3	13	129			
17/85	7	710	720	3	23	127			
24/85	14	747	753	10	33	154			
31/85	21	—	—	—	—				
AN07/86	28	810	810	47	73	175			
EB. 06/86	58	923	920	103	133	229			
AR. 10/86	90	1007	1003	150	187	262			
PR. 9/86	127	1067	1063	177	213	295			
AY 9/86	150	1093	1097	190	223	314			
UN. 9/86	181	1147	1147	217	253	337			
LY 8/86	210	1180	1180	233	260	359			
UG. 7/86	238	1210	1210	240	277	377			
EPT. 8/86	272	1267	1263	257	287	418			
CT. 6/86	300	1297	1293	270	303	434			
OV. 17/86	342	1337	1327	290	320	452			
EC. 10/86	365	1347	1347	290	323	466			

CREEP TEST SUMMARY (ASTM C 512)

Mix Designation R5B Date of Mixing NOV. 6/84

Specimen Numbers R5B 3-6

Curing Regime Days Moist _____, Days at 50% R.H. 365

Date of Loading NOV. 19/85 Age 378 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 500 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens R5B-3	Loaded Specimens R5B-4	Unloaded Specimens R5B-5	Unloaded Specimens R5B-6	Creep Strain			
V. 19/85	0	497	503						
19/85	2.5 HR	547	553	10	3	44			
20/85	1	600	617	27	23	84			
21/85	2	647	650	30	23	127			
22/85	3	667	677	27	23	147			
25/85	6	707	727	30	33	186			
27/85	8	737	753	33	33	212			
EC. 03/85	14	773	790	50	53	230			
10/85	21	847	860	77	80	275			
17/85	28	897	910	93	97	309			
N 16/86	58	1017	1037	153	167	367			
B. 17/86	90	1130	1147	200	213	432			
B. 31/86	122	1203	1227	230	240	480			
B. 23/86	155	1250	1267	257	263	499			
Y 20/86	182	1283	1297	260	267	527			
N. 17/86	212	1343	1360	293	300	555			
Y 21/86	244	1370	1383	303	310	570			
G. 15/86	269	1393	1390	303	313	584			
PT. 24/86	309	1457	1467	323	327	637			
T. 15/86	330	1477	1487	337	347	640			
V. 19/86	365	1493	1507	343	353	652			

CREEP TEST SUMMARY (ASTM C 512)

Mix Designation R3B Date of Mixing NOV. 20/84

Specimen Numbers R3B 3-6

Curing Regime Days Moist _____, Days at 50% R.H. 365

Date of Loading DEC. 10/85 Age 385 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 665 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens R3B-3	Loaded Specimens R3B-4	Unloaded Specimens R3B-5	Unloaded Specimens R3B-6	Creep Strain
DEC. 10/85	0	660	670			
"	3¼ HR	743	747	0	0	80
11/85	1	793	803	7	7	176
12/85	2	833	837	13	10	159
13/85	3	863	870	23	13	184
16/85	6	927	930	43	37	274
17/85	7	937	940	47	40	230
24/85	14	997	1003	80	63	264
31/85	21	—	—	—	—	—
AN 07/86	28	1117	1120	130	113	332
EB. 06/86	58	1287	1297	190	177	444
AR. 10/86	90	1420	1423	237	213	532
PR. 11/86	122	1507	1513	267	243	590
AY 09/86	150	1560	1567	277	257	632
UN. 06/86	180	1603	1613	293	280	657
ULY 08/86	210	1680	1683	323	297	707
UG. 05/86	240	1720	1770	333	310	734
EPT. 08/86	276	1780	1773	340	317	783
CT. 06/86	300	1813	1810	357	330	803
OV. 17/86	342	1863	1857	373	353	832
EC. 10/86	365	1873	1873	373	347	848

: Designation T5RA U Date of Mixing JAN. 24/85

ecimen Numbers T5RA-1-4

ring Regime Days Moist _____, Days at 50% R.H. _____

te of Loading JAN. 27/86 Age 367 days, Compressive Strength _____ MPa

plied Stress 17.0 MPa Stress/Strength Ratio _____

stantaneous Elastic Strain 597 με Instantaneous Modulus _____ GPa

ecific Creep _____ Creep Rate _____

otes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens T5RA-3	Loaded Specimens T5RA-4	Unloaded Specimens T5RA-1	Unloaded Specimens T5RA-2	Creep Strain			
1.27/86	0	590	603						
27/86	4 HRS	630	637	0	10	37			
28/86	1	680	677	3	10	75			
29/86	2	693	690	17	30	71			
30/86	3	720	707	23	33	89			
31/86	4	733	727	33	43	95			
3.3/86	7	763	750	43	53	117			
10/86	14	833	820	87	93	140			
17/86	21	907	883	127	140	165			
24/86	28	940	923	140	157	186			
R.26/86	58	1057	1047	213	233	232			
AY 2/86	95	1160	1147	263	280	285			
AY 27/86	120	1203	1190	297	317	293			
N. 26/86	150	1243	1230	317	337	313			
UG. 1/86	185	1283	1277	337	357	336			
UG.25/86	210	1347	1337	357	370	382			
EPT.24/86	240	1387	1377	373	393	402			
T. 28/86	274	1423	1420	393	413	427			
OV. 24/86	301	1460	1460	407	423	448			
EC. 23/86	330	1490	1487	417	433	467			
AN. 30/87	368	1500	1497	433	443	464	?		

x Designation R5RA Date of Mixing JAN. 22/85

ecimen Numbers R5RA-1-4

ring Regime Days Moist _____, Days at 50% R.H. _____

ate of Loading JAN. 22/86 Age 365 days, Compressive Strength _____ MPa

pplied Stress 17.0 MPa Stress/Strength Ratio _____

nstantaneous Elastic Strain 557 με Instantaneous Modulus _____ GPa

pecific Creep _____ Creep Rate _____

otes:

Strain Data Summary-με

ate	Time under load - days	Loaded Specimens R5RA-3	Loaded Specimens R5RA-4	Unloaded Specimens R5RA-1	Unloaded Specimens R5RA-2	Creep Strain
N 22/86	0	547	567			
22/86	4 HRS	607	630	7	0	58
23/86	1 DAY	647	673	20	7	90
24/86	2	673	697	27	17	106
27/86	5	730	750	43	23	150
28/86	6	743	760	40	20	165
29/86	7	753	773	43	30	170
EB. 5/86	14	820	837	77	50	208
12/86	21	880	883	110	100	220
19/86	28	953	970	157	157	248
AR. 21/86	58	1127	1140	263	227	332
PR. 23/86	91	1240	1250	313	277	393
AY 27/86	120	1307	1343	333	300	457
UN. 17/86	148	1367	1403	377	340	470
ULY 21/86	180	1430	1433	383	343	512
UG. 20/86	210	1467	1460	397	363	527
EPT. 24/86	245	1533	1530	420	377	576
CT. 28/86	279	1563	1567	427	387	601
OV. 18/86	300	1587	1583	440	400	608
EC. 18	330	1610	1610	453	410	622
AN. 30/87	373	1640	1637	460	470	642

Mix Designation T4RA U Date of Mixing FEB. 5/85

Specimen Numbers T4RA-1-4

Curing Regime Days Moist _____, Days at 50% R.H. _____

Date of Loading FEB. 5/86 Age 365 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 590 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens		Unloaded Specimens		Creep Strain			
		T4RA-3	T4RA-4	T4RA-1	T4RA-2				
EB. 5/86	0	597	583						
5/86	4 1/4 HRS	633	613	7	0	30			
6/86	1	673	653	13	.7	66			
7/86	2	700	670	17	17	78			
10/86	5	743	710	33	27	107			
11/86	6	750	710	33	33	107			
12/86	7	770	740	40	43	124			
19/86	14	850	813	90	87	153			
28/86	23	890	850	100	97	182			
AR. 5/86	29	923	890	117	123	197			
PR. 3/86	57	1047	1000	187	193	244			
AY 6/86	90	1123	1077	217	230	287			
UN. 5/86	120	1180	1143	253	270	310			
ULY 4/86	149	1233	1187	277	293	335			
UG. 5/86	181	1280	1237	297	307	367			
EPT. 8/86	215	1343	1293	307	323	413			
CT. 6/86	243	1380	1327	327	343	429			
OV. 17/86	285	1427	1367	347	363	457			
EC. 2/86	300	1433	1377	347	363	460			
EC. 24/86	322	1467	1413	357	373	485			
EB. 10/87	370	1513	1450	377	390	508			

ix Designation R4RA Date of Mixing JAN. 31/85

pecimen Numbers R4RA-1-4

uring Regime Days Moist _____, Days at 50% R.H. _____

ate of Loading JAN. 30/86 Age 364 days, Compressive Strength _____ MPa

pplied Stress 17.0 MPa Stress/Strength Ratio _____

nstantaneous Elastic Strain 574 με Instantaneous Modulus _____ GPa

pecific Creep _____ Creep Rate _____

otes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens R4RA-3	R4RA-4	Unloaded Specimens R4RA-1	R4RA-2	Creep Strain		
N. 30/86	0	567	580					
	4¼ HRS	620	633	7	3	48		
31/86	1DAY	687	700	17	20	101		
B.03/86	4	743	757	30	23	150		
4/86	5	750	760	30	33	150		
5/86	6	777	790	30	30	180		
6/86	7	783	797	40	33	180		
13/86	14	853	870	67	67	221		
20/86	21	917	927	103	107	243		
27/86	28	967	983	133	133	268		
AR. 07/86	36	1017	1027	157	150	295	LOADING RAM CHANGED	
07/86	36+6½HR	1037	1043	157	150	313	DUE TO OIL LEAKAGE	
10/86	39	1060	1063	167	163	323		
PR. 03/86	63	1183	1187	227	223	386		
AY 07/86	97	1290	1293	267	250	459		
AY 30/86	120	1350	1353	307	290	479		
UN. 26/86	147	1383	1393	313	300	508		
ULY 29/86	180	1440	1443	330	313	546		
EPT. 8/86	221	1530	1527	353	337	610		
CT. 6/86	249	1567	1557	363	350	632		
CT. 28/86	271	1587	1583	367	353	651		
OV. 26/86	300	1603	1597	383	360	655		
EC. 23/86	327	1640	1630	390	370	681		
AN. 30/87	365	1653	1643	397	380	686		

Mix Designation T3RA Date of Mixing MAR. 6/85

Specimen Numbers T3RA-1-4

Curing Regime Days Moist _____, Days at 50% R.H. _____

Date of Loading MAR. 6/86 Age 365 days, Compressive Strength _____ MPa

Applied Stress 17.0 MPa Stress/Strength Ratio _____

Instantaneous Elastic Strain 557 με Instantaneous Modulus _____ GPa

Specific Creep _____ Creep Rate _____

Notes:

Strain Data Summary-με

Date	Time under load - days	Loaded Specimens T3RA-3	Loaded Specimens T3RA-4	Unloaded Specimens T3RA-1	Unloaded Specimens T3RA-2	Creep Strain			
AR. 6/86	0	553	550						
6/86	4.0 Hrs	593	590	0	3	38			
7/86	1	617	610	0	3	60			
10/86	4	673	663	13	7	106			
11/86	5	677	667	13	7	110			
12/86	6	700	697	30	20	127			
14/86	8	710	707	30	23	130			
21/86	15	750	743	43	37	155			
27/86	21	777	770	57	47	170			
PR. 3/86	28	810	800	77	63	183			
AY 5/86	60	910	900	113	97	248			
N 4/86	90	950	943	143	130	258			
LY 4/86	120	1010	1003	177	163	285			
AG. 5/86	152	1057	1050	197	180	313			
EPT. 8/86	186	1117	1110	217	197	355			
CT. 6/86	214	1153	1157	240	220	373			
OV. 17/86	256	1207	1200	270	257	388			
EC. 1/86	270	1217	1213	263	253	405			
EC. 23/86	292	1243	1240	283	267	415			
N 30/87	330	1273	1270	300	283	428			
AR. 06/87	365	1307	1303	303	290	457			